Mac Pro
User's Guide

Includes setup, expansion, and troubleshooting information for your Mac Pro computer

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Getting Started

1

Congratulations on purchasing your new high-performance Mac Pro computer. This chapter contains instructions for setting up your computer and display.

Your Mac Pro features the latest computer technology, including advanced 64-bit dual core processor technology, high-speed FB-DIMM memory, PCI Express graphics and expansion cards, and internal storage, all in an anodized aluminum chassis with easy access to internal components.

Setting Up Your Mac Pro

Your Mac Pro is designed so that you can set it up quickly and start using it right away. Follow the steps on the next few pages to set up your Mac Pro.

Before you begin, remove any protective film from the outside of your computer and from the inside of the side panel. For information about opening the side panel, see "Opening the Computer" on page 28.

Step 1: Position your computer and display

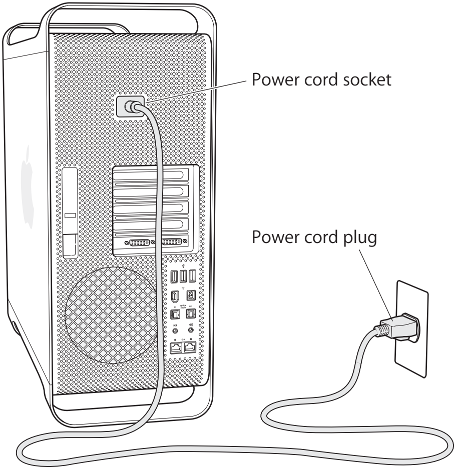
Pick up your Mac Pro by both of its handles using correct lifting techniques. If your display is heavy, use correct lifting techniques when positioning it as well. Position the computer and display so that:

- They are each on a sturdy, flat surface
- The power cable connectors don't press against a wall or other object
- The airflow in front of, behind, and below the display or computer is not obstructed
- The computer's optical drive trays have space to open in front

The only way to shut off power completely to your computer and display is to disconnect their power plugs from the power source. Make sure the power cords for your computer and display are within easy reach so that you can unplug the computer or display when you need to.

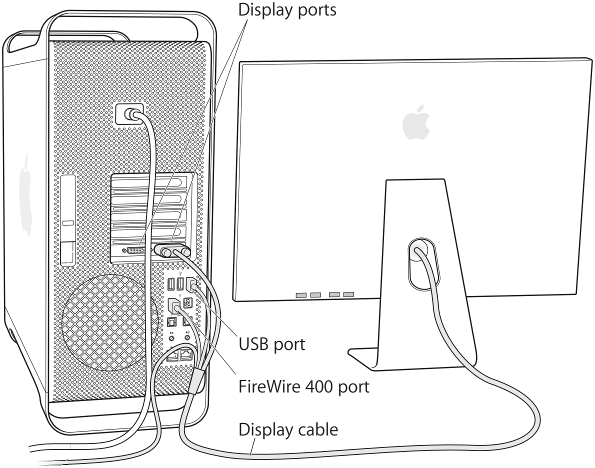
Step 2: Plug in the power cord

Plug the power cord completely into the recessed power cord socket on the back of your Mac Pro and plug the other end into a grounded outlet or a grounded power strip.



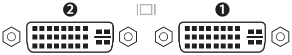
Step 3: **Connect the display**

Connect your display as shown in the illustration below. Depending on the display, you may have one or more cables to connect. Check the instructions that came with the display for additional setup information.

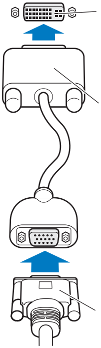


You can connect two displays with Digital Visual Interface (DVI) connectors to the display ports on the back of your Mac Pro.

You can connect any Apple display to either port. For full resolution on a 30-inch Apple Cinema HD Display, use DVI port 1.



DVI display ports



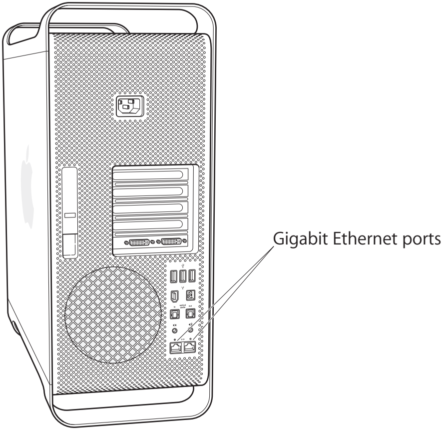
You can also connect displays that have an Apple Display Connector (ADC) or a video graphics array (VGA) connector using one of the following adapters:

- To connect a VGA display, use the Apple DVI to VGA Display Adapter included with your Mac Pro to connect the display to the DVI port.
- To connect an ADC display, use an Apple DVI to ADC Display Adapter, not included, to connect the display to the DVI port.

To purchase an Apple DVI to ADC Display Adapter, contact an Apple Authorized Reseller, visit an Apple Store retail location, or go online to the Apple Store at www.apple.com/store.

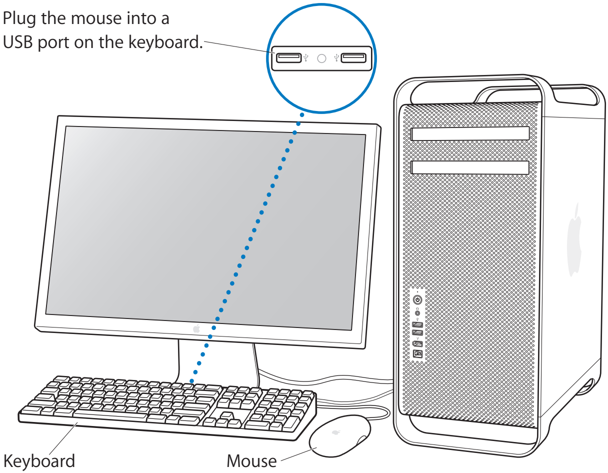
Step 4: Connect an Ethernet cable

To access the Internet or a network, connect one end of an Ethernet cable to either of the Ethernet ports on the back of your Mac Pro. Connect the other end to a DSL modem, cable modem, or Ethernet network.



Step 5: Connect the keyboard and mouse

Connect the keyboard cable to one of the USB (ψ) ports on the computer or on your display. Plug the Mighty Mouse cable into a USB port on the keyboard.



If the keyboard cable is not long enough to reach a USB port on your computer, use the keyboard extension cable that came with your computer.



Apple keyboard extension cable

Using a Wireless Keyboard and Mouse

If you purchased an Apple Wireless Keyboard and Mouse with your Mac Pro, follow the instructions that came with the keyboard and mouse to set them up.

Step 6: Turn on your Mac Pro

Press the power (⏻) button on the front of the computer to turn it on. If your display must be turned on separately, turn it on by pressing its power button.

Step 7: Use Setup Assistant

The first time you turn on your Mac Pro, Setup Assistant starts. Setup Assistant helps you enter your Internet and email information and set up a user account on your Mac Pro. If you already have a Mac, Setup Assistant can help you automatically transfer files, applications, and other information from your previous Mac to your new Mac Pro.

Step 8: Customize Your Desktop and Set Your Preferences

You can quickly make your desktop look the way you want using System Preferences. Choose Apple () > System Preferences from the menu bar. As you get to know your computer, explore System Preferences, your command center for most settings on your Mac Pro. For more information, open Mac Help and search for "System Preferences" or for the specific preference you want to change.

Need Help Setting Up?

If you don't see anything on your screen or you think your computer did not start up properly, check the following:

- Is the computer plugged into a power source? If it's plugged into a power strip, is the power strip turned on?
- Is the power cord securely plugged into the back of the computer?

- Are the keyboard and display cables connected correctly?
- Is the display turned on? Are the brightness and contrast of the display adjusted correctly? If your display has brightness and contrast controls, adjust them.
- If you still don't see anything on your screen, restart your computer. Press and hold the computer's power button for 5 or 6 seconds, until the computer turns off. Press it again to turn on the computer.
- If you see a blinking question mark on the screen or a series of flashes from the status light, see Chapter 4, "Troubleshooting," on page 53.

Putting Your Mac Pro to Sleep or Shutting It Down

When you finish working, you can put your Mac Pro to sleep or shut it down.

Putting Your Mac Pro to Sleep

If you will be away from your Mac Pro for only a short time, put the computer to sleep. When the computer is in sleep, the display's screen is dark. You can quickly wake the computer from sleep and bypass the startup process.

To put the computer to sleep, do one of the following:

- Choose Apple () > Sleep.
- Press the power button on the front of your Mac Pro.
- Choose Apple () > System Preferences, click Energy Saver, and set a sleep timer.

To wake your computer from sleep, do one of the following:

- Press any key on the keyboard.
- Click the mouse.
- Press the power button on the front of your Mac Pro.

Shutting Down Your Mac Pro

If you will not be using your Mac Pro for a day or more, you should turn it off. To turn off your Mac Pro, choose Apple () > Shut Down.

> ***Warning:*** Do not turn off your Mac Pro by turning off the switch on a power strip or by pulling out the computer's power plug (unless you can't turn off the computer any other way). Your files or system software could be damaged if your computer is not shut down properly.

> ***Warning:*** Shut down your Mac Pro before moving it. Moving your computer while the hard disk is spinning can damage the hard disk, causing loss of data or the inability to start up from the hard disk.

Getting to Know Your Mac Pro

2

This chapter gives basic information you need to know about your Mac Pro.

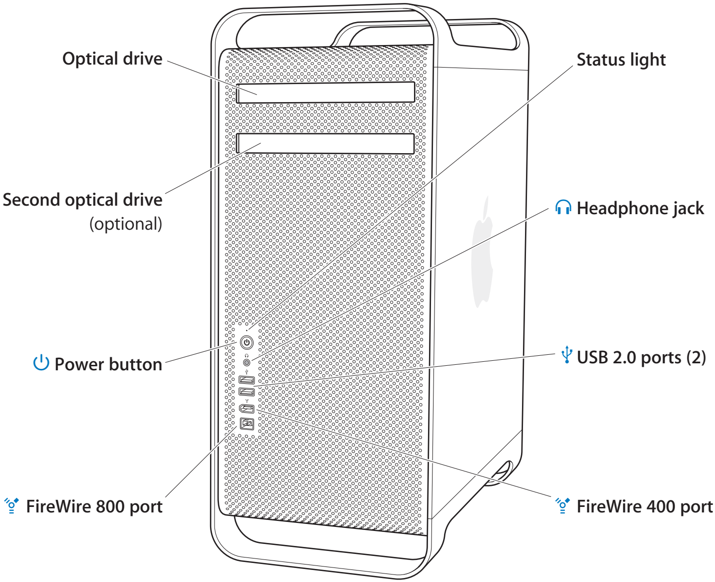
Read on for an overview of the features and ports of your computer.

Getting the Latest Information

The Apple website at www.apple.com links you to the latest Apple news, free downloads, and online catalogs of software and hardware for your Mac Pro.

You can also find the manuals for many Apple products, and technical support for all of Apple's products, on the Apple Support website at www.apple.com/support.

Basic Features on the Front of Your Mac Pro



Optical drive

Your Mac Pro has a DVD+R DL/DVD±RW/CD-RW SuperDrive, which can read CD-ROM, photo CD, audio, and DVD discs. It can write music, documents, and other files to CD-R, CD-RW, DVD±R, DVD±RW, and DVD+R Double Layer (DL) discs. To open the drive, press the Media Eject (⏏) key on your Apple Keyboard. If your Mac Pro has a second optical drive, press the Option and Media Eject (⏏) keys to open it.

Power button

Press this button to turn on your Mac Pro, put it to sleep, or wake it from sleep. To restart, press and hold this button for 5 or 6 seconds until your Mac Pro turns off, and, then press it again to turn it on.

FireWire 400 and 800 ports

Connect your Mac Pro to FireWire digital video (DV) cameras, scanners, and external hard disk drives. Connect and disconnect FireWire devices without restarting. The FireWire 400 port supports data rates up to 400 megabits per second (Mbps).The FireWire 800 port supports data rates up to 800 Mbps.

USB 2.0 ports

Connect your Mac Pro to USB keyboards, mice, printers, scanners, iPods, speakers, microphones, and hubs. Your display may also have USB ports.

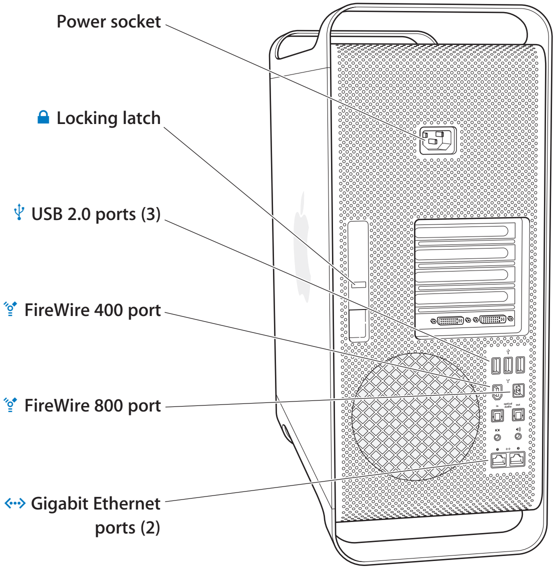
Headphone jack

Connect headphones to your Mac Pro through the headphone jack. When a headphone plug is inserted into the headphone jack, the built-in speaker is muted.

Status light

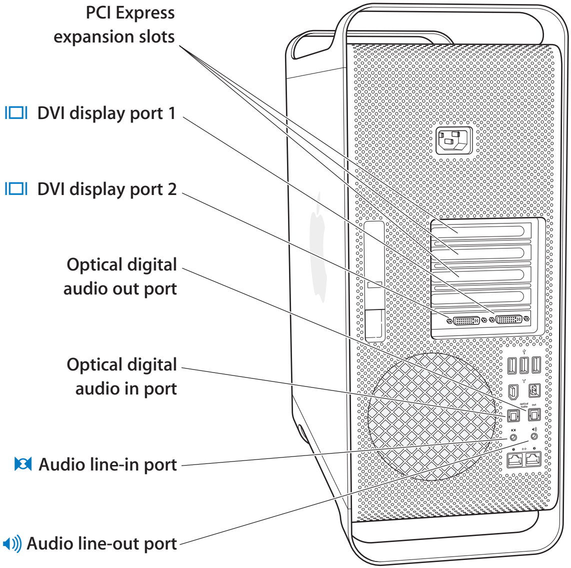
A white light indicates your Mac Pro is on; a pulsing light indicates it's in sleep.

Ports and Connectors on the Back of Your Mac Pro



∼	**Power socket** Connect the power cord that came with your Mac Pro. Do not use ordinary power or extension cords.
🔒	**Locking latch** Lift the latch to open the side panel and access the internal components in your Mac Pro. If you are working inside your computer and the latch is down, the optical and hard drives are locked in place. You can attach a security lock to the latch to prevent access and secure the internal components. You can also attach a security cable to the latch or through the handles and feet to protect your Mac Pro. See page 37.
ψ	**USB 2.0 ports** Connect your Mac Pro to USB devices, such as keyboards, mice, printers, scanners, speakers, USB microphones, and USB hubs. Your display may also have USB ports.
	FireWire 400 and 800 ports The FireWire 400 port supports data rates of 100, 200, and 400 Mbps. The FireWire 800 port supports data rates of 100, 200, 400, and 800 Mbps.
<···>	**Dual Gigabit Ethernet ports with jumbo frame support** Connect your Mac Pro to a high-speed Ethernet network to access the Internet or network resources such as printers and servers, and share information over the network using a CAT 5e cable.

More Ports and Connectors on the Back



PCI Express expansion slots (3)
Expand your Mac Pro by installing up to three Peripheral Component Interconnect (PCI) Express cards in the covered slots labeled 2, 3, and 4.

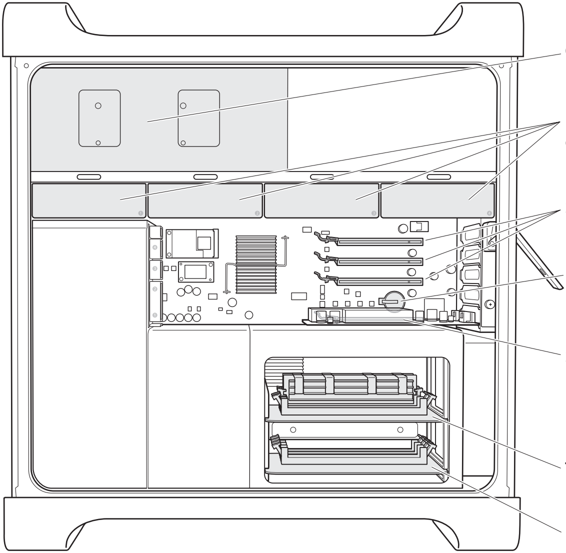
DVI display ports
Connect displays that use a Digital Visual Interface (DVI) connector to the DVI display ports. Connect an Apple display, such as the 20-, 23-, or 30-inch Apple Cinema Display, to either port. For full resolution, connect the 30-inch Apple Cinema HD Display to port 1. You can also connect displays that use a video graphics array (VGA) connector with the Apple DVI to VGA Display Adapter that came with your Mac Pro.

Optical digital audio in and out ports
Connect to decks, receivers, digital instruments, and 5.1 surround-sound speaker systems using standard Toslink cables or fiber-optic cables with a 3.5 mm plastic or nylon optical plug. You can transfer stereo or encoded 5.1 audio using the S/PDIF (Sony/Philips Digital Interface) protocol and Toslink cables.

Analog audio line-in port
Connect self-powered microphones, MP3 and CD players, and other devices with analog capability.

Analog audio line-out port
Connect self-powered analog speakers and other devices with analog output capability.

Internal Expansion Options



Optical drives
Your Mac Pro comes with one or two DVD+R DL/DVD±RW/CD-RW SuperDrives in the optical drive carrier. To replace an optical drive, see "Replacing the Optical Drive" on page 42.

Hard disk drive
Your Mac Pro comes with up to four hard disk drives installed in the drive carriers. To install or replace the hard disk drives, see "Installing Internal Storage Devices" on page 38.

PCI Express slots
Your Mac Pro has three PCI Express expansion slots. To install PCI cards in slots 2 through 4 to expand your computer's capabilities, see "Adding PCI Express Cards" on page 47.

Battery
Your Mac Pro uses an internal backup battery. If your Mac Pro has trouble starting up, or if the system date and time are frequently incorrect, you may need to replace the battery. See "Replacing the Internal Backup Battery" on page 50.

Double-wide PCI Express graphics slot
Connect up to two displays to the graphics card in the PCI Express graphics slot (slot 1). You can replace the card in this slot and install additional graphics cards in PCI slots 2 through 4. See "Adding PCI Express Cards" on page 47.

Memory cards
Your Mac Pro has two memory cards. Each card holds up to 4 FB-DIMMS, for a total of 8 DIMMs. To add more memory, install 667MHz FB-DIMMs in pairs on the memory cards. See "Installing Memory" on page 32 for information about the specific type of memory used in Mac Pro.

Getting Answers

Much more information about using your Mac is available in Mac Help and on the Internet at www.apple.com/support.

To open Mac Help:

1 Click the Finder icon in the Dock (the bar of icons along the edge of the screen).

2 Choose Help > Mac Help (click the Help menu in the menu bar and choose Mac Help).

3 Click in the search field, type a question, and press Return on your keyboard.

More Information

For more information about using your Mac Pro, see the following:

To learn about...	See...
Installing additional drives, memory, expansion cards, or changing the battery	Chapter 3, "Working Inside Your Computer," on page 27.
Troubleshooting your computer if you have a problem	Chapter 4, "Troubleshooting," on page 53.
Finding service and support for your Mac Pro	"Learning More, Service, and Support" on page 66 or the Apple Support website www.apple.com/support.
Using Mac OS X	The Mac OS X website at www.apple.com/macosx/overview. Or open Mac Help and search for "Mac OS X."
Using iLife applications	The iLife website at www.apple.com/ilife. Or open an iLife application, and then open Mac Help and type a question in the search field.

To learn about…	See…
Changing System Preferences	Open System Preferences by choosing Apple () > System Preferences. Or open Mac Help and search for "system preferences."
Using your mouse or keyboard	Open Mac Help and search for "mouse" or "keyboard."
Using AirPort wireless technology	The AirPort Support page at www.apple.com/support/airport. Or open AirPort Help by clicking and holding the Home button at the top of a Mac Help page, and then select AirPort Help from the list
Using Bluetooth® wireless technology	The Bluetooth Support page at www.apple.com/support/bluetooth. Or open the Bluetooth File Exchange application, located in the Utilities folder within the Applications folder, and choose Help > Bluetooth Help.
Connecting a printer	Open Mac Help and search for "printing."
FireWire and USB connections	Open Mac Help and search for "USB" or "FireWire."
Connecting to the Internet	Open Mac Help and search for "Internet."

Working Inside Your Computer

3

Use the information in this chapter to customize and expand your Mac Pro to fit your needs.

This chapter provides information and instructions for working inside your computer. It includes information about important procedures in the following sections:

- "Opening the Computer" on page 28
- "Installing Memory" on page 32
- "Installing Internal Storage Devices" on page 38
- "Adding PCI Express Cards" on page 47
- "Replacing the Internal Backup Battery" on page 50

Warning: Apple recommends that you have an Apple-certified technician install memory, PCIe cards, and internal storage devices. To contact an Apple Authorized Service Provider or Apple for service, see "Learning More, Service, and Support" on page 66. If you install these items yourself, you risk damaging your equipment, and such damage is not covered by the limited warranty on your computer. See an Apple Authorized Reseller or Apple Authorized Service Provider for additional information about this or any other warranty question.

Opening the Computer

1 Before you open your Mac Pro, shut it down by choosing Apple () > Shut Down.

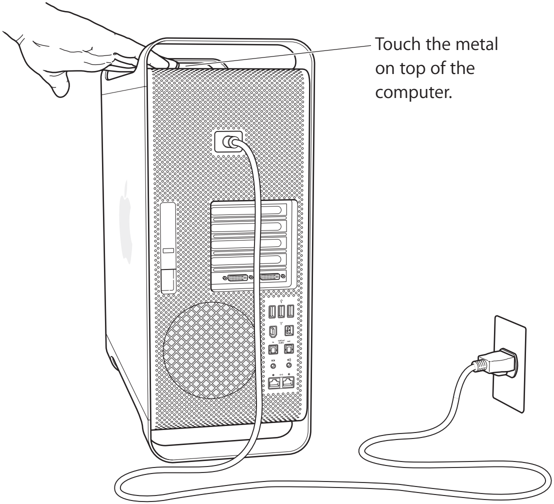
⚠ ***Warning:*** Always shut down your Mac Pro before opening it to avoid damaging its internal components or the components you want to install. Do not open the computer or attempt to install items inside it while it is on.

2 Wait 5 to 10 minutes to allow the computer's internal components to cool.

⚠ ***Warning:*** After shutting down your computer, the internal components can be very hot. Let the computer cool down before continuing.

3 Touch the metal on the outside of your Mac Pro to discharge any static electricity from your body.

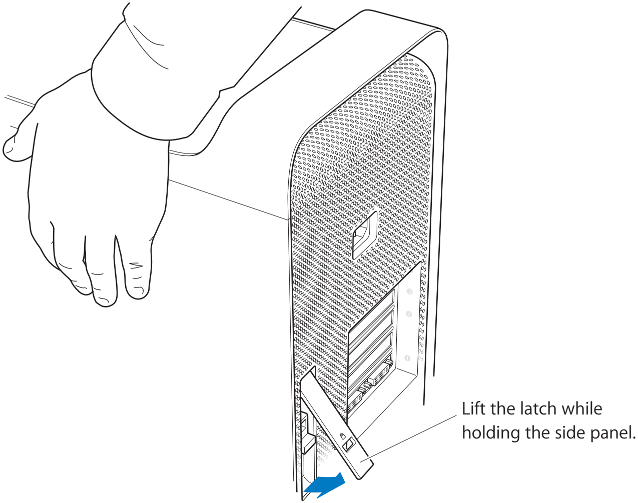
Important: Always discharge static before you touch any parts or install any components inside the computer. To avoid generating static, do not walk around the room until you finish installing the cards, memory, or internal storage device and close the computer.



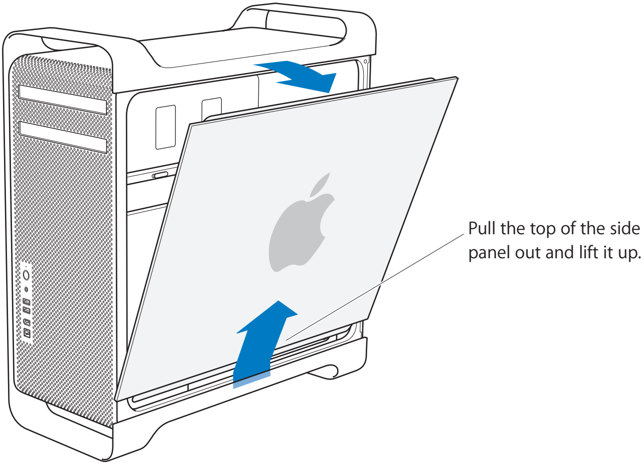
4 Unplug all the cables and the power cord from the computer.

⚠ ***Warning:*** To avoid damaging internal components or components you want to install, always unplug your Mac Pro. Don't attempt to install items while it's plugged in.

5 Hold the side panel and lift the latch on the back of the computer.



6 Remove the side panel.



Important: When you remove the side panel, hold it securely.

Installing Memory

Your Mac Pro has two memory cards with 4 memory slots on each card (in four banks of two each). Your Mac Pro comes with a minimum of 1 GB of memory, installed as a pair of 512 MB fully buffered dual inline memory modules (FB-DIMMs) in two of the DIMM slots. You can install additional pairs of 512 MB, 1 GB, or 2 GB FB-DIMMS in the open DIMM slots on the memory cards.

DIMMs must be installed in equal-sized pairs and fit these specifications:

- 667 MHz, FB-DIMMS
- 72-bit wide, 240-pin modules
- 36 devices maximum per DIMM
- Error-correcting code (ECC)

Important: Apple recommends that you use Apple-approved FB-DIMMS. Non Apple-approved FB-DIMMS may cause your Mac Pro to operate louder or decrease performance to conserve heat. DIMMs from older Mac computers cannot be used in your Mac Pro.

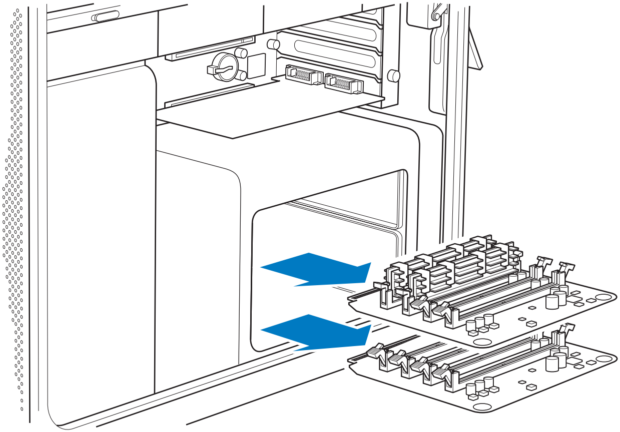
Note: When purchasing DIMMs for use in Mac computers, make sure that the memory vendor conforms to the Joint Electron Device Engineering Council (JEDEC) specification. Check with your memory vendor to ensure that the DIMMs support the correct timing modes and that the Serial Presence Detect (SPD) feature has been programmed properly, as described in the JEDEC specification. To check the compatibility of your DIMMs, see the Macintosh Products Guide on Apple's website at www.apple.com/guide. You can purchase Apple-branded memory online from the Apple Store at www.apple.com/store.

To install memory:

1 Open your computer and remove the side panel, following the instructions on page 28.

⚠ *Warning:* Always wait 5 to 10 minutes for your Mac Pro to cool down before you attempt to install memory. The components on the memory cards may be very hot.

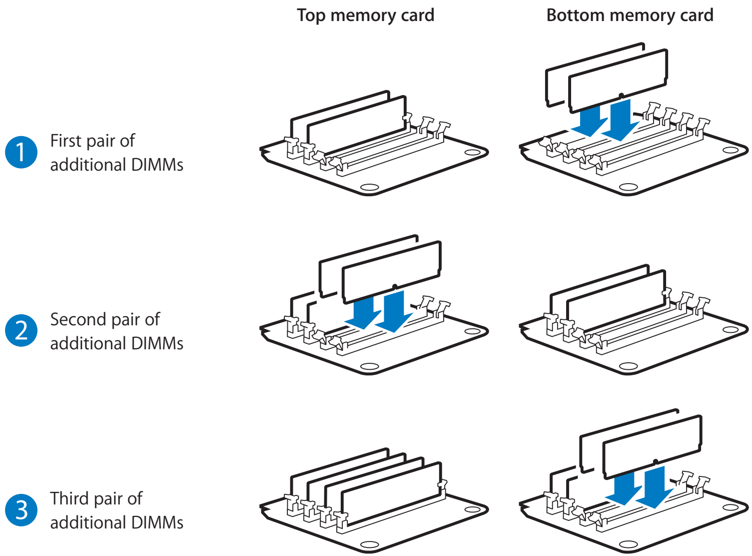
2 Remove the memory card and place it on a soft clean cloth.

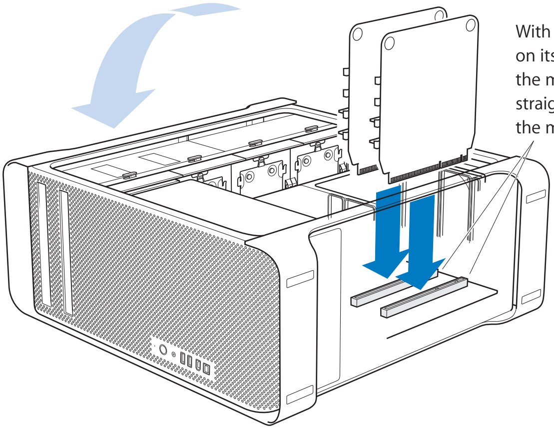


3 Open the ejectors on the DIMM slot by pushing them out to the sides.

4 Align the first FB-DIMM in the slot on the memory card and push both ends of the FB-DIMM down until the tabs are vertical and the ejectors snap into place. Repeat to install the second FB-DIMM. Don't touch the gold DIMM connectors.

Important: Add DIMMs to the memory cards in the order shown here.





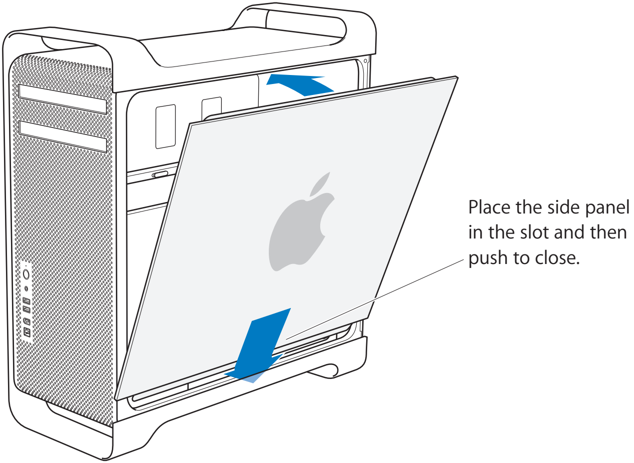
With the computer on its side, push the memory cards straight down into the memory slots.

5 Lay your Mac Pro down on a soft, clean cloth on the desk or work surface to avoid scratching the work surface or your Mac Pro.

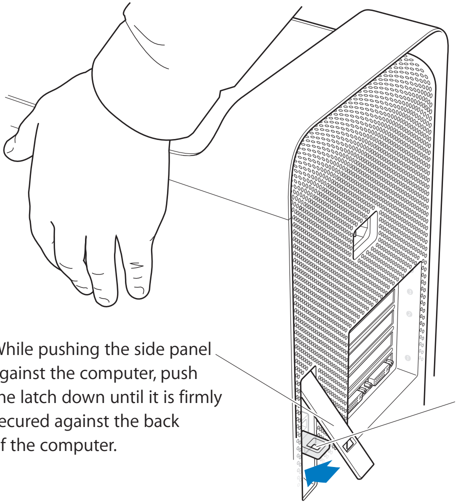
6 Install the memory cards, pushing slightly until they are seated in the memory slot.

7 Stand your Mac Pro up and replace the side panel.

Important: When you replace the side panel, hold it securely so it stays in place as you push the latch down.



8 Push the latch down to secure the side panel.



While pushing the side panel against the computer, push the latch down until it is firmly secured against the back of the computer.

To lock the side panel or secure the computer, flip down the lock tab before you close the latch. This provides a metal loop through which you can attach a lock or cable.

Installing Internal Storage Devices

Your Mac Pro has room for six internal drives: two optical drives and four hard disk drives. In most configurations, a single hard disk drive occupies the first hard drive bay and an optical drive is located in the top optical drive bay.

You can add up to three additional Serial ATA (SATA) 3 Gbps hard disk drives to the empty hard drive bays. The drives must meet these specifications:

- *Type:* SATA 3 Gbps
- *Width:* 3.9 inches (102 mm)
- *Depth:* 5.7 inches (147 mm)
- *Height:* 1.0 inch

For more information about requirements and devices supported, visit an Apple Authorized Reseller or the Apple Support website at www.apple.com/support.

Important: Use the original Apple cables that came with your Mac Pro when you install or replace the optical drives.

Installing SATA 3 Gbps Hard Disk Drives

Your Mac Pro can accommodate up to four internal 1-inch-high SATA 3 Gbps hard disk drives in the hard drive bays. If your Mac Pro comes with a single drive installed, it's in the first bay. You can install drives in the second, third, and fourth hard drive bays.

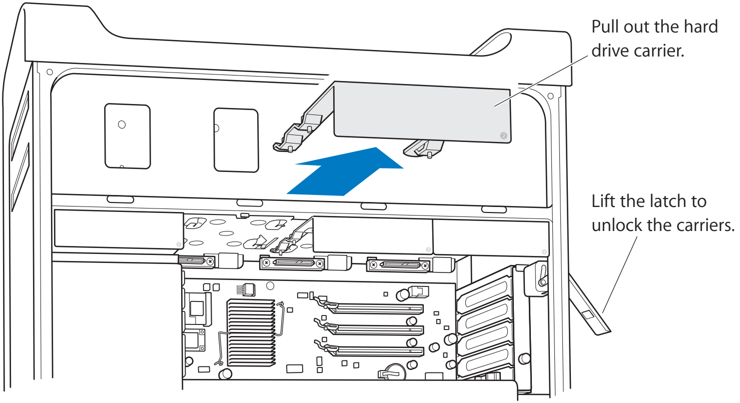
To install a hard disk drive:

1 Open your Mac Pro and remove the side panel following the instructions that begin on page 28.

2 Lift the latch to unlock the hard drive carriers.

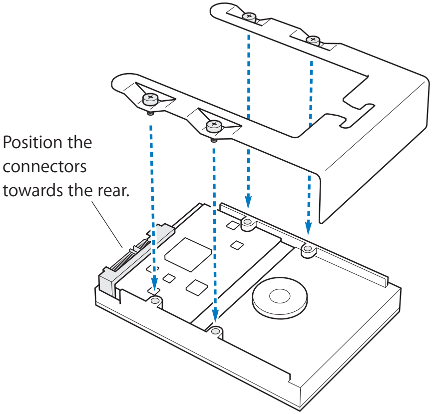
Important: When the latch is down, the carriers are locked in the drive bays and can't be removed.

3 Pull the hard drive carrier out of the drive bay.

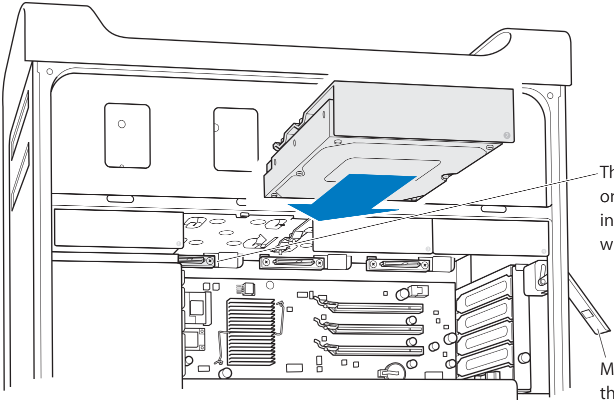


4 Use the four screws on the carrier to attach the hard disk drive to the carrier.

Important: If the printed circuit board is exposed on the bottom of the hard disk drive, hold the drive by its sides. To avoid damaging the drive, don't touch the printed circuit board.



5 Lift the latch and then slide the carrier over the guides and into the drive bay, until it's seated in the bay and snaps into place.



6 Replace the side panel and push the latch down to secure it.

Replacing the Optical Drive

Your Mac Pro comes with one or two SuperDrives installed in the optical drive bays. Follow these instructions to replace your optical drive.

Important: Contact your drive manufacturer or consult the manufacturer's website to determine if your drive is set to cable select mode. Before installation, set the drive to cable select mode if the manufacturer hasn't already done so.

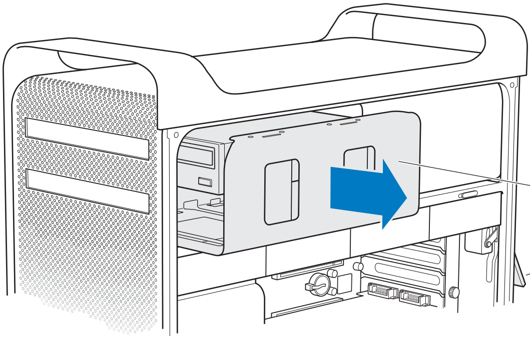
To replace the optical drive:

1 Open your Mac Pro and remove the side panel following the instructions on page 28.

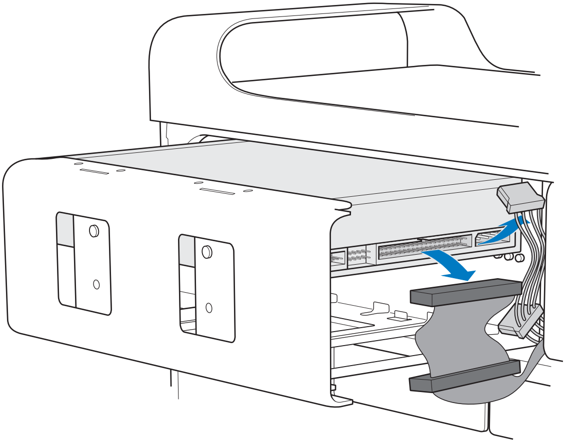
2 Lift the latch to unlock the optical drive carriers.

Important: When the latch is down, the drives and carriers are locked in the drive bays and can't be removed.

3 Pull the optical drive carrier halfway out of the optical drive bay.

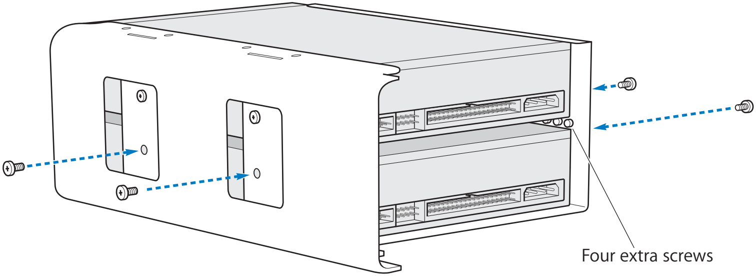


4 Disconnect the power and ribbon cables from the optical drive and remove the carrier.



5 Remove the optical drive from the carrier by unscrewing the four attachment screws.

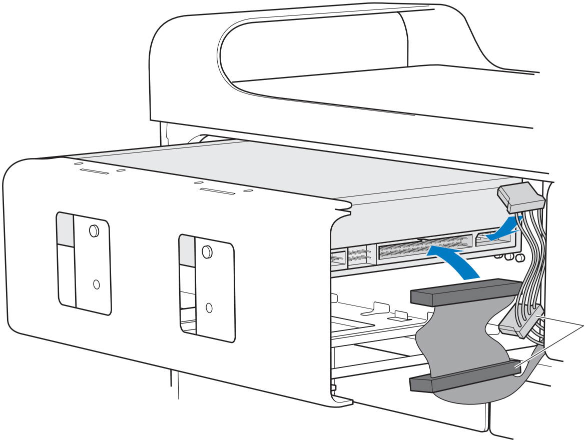
6 Use the four screws from the original optical drive to attach the replacement drive to the carrier.



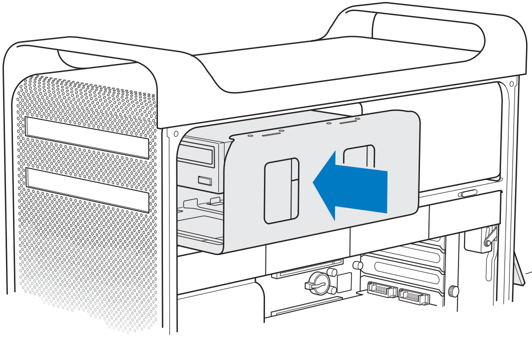
7 Slide the optical drive and carrier over the guides halfway into the drive bay,

8 Attach the power and ribbon cables to the back of the drive.

Important: If you're replacing two optical drives, attach the connector on the end of the ribbon cable to the top drive and the connector in the middle to the bottom drive.



9 Lift the latch and then slide the optical drive carrier into the drive bay, pushing it into place.



10 Replace the side panel and push the latch down to secure it.

Adding PCI Express Cards

You can expand the capabilities of your Mac Pro by installing cards in the Peripheral Component Interconnect (PCI) Express slots. Your Mac Pro has one double-wide PCI Express graphics slot and three PCI Express expansion slots, for a total of four slots. These slots accommodate PCI Express graphics cards and expansion cards.

About PCI Express Cards

Your Mac Pro comes with a high-performance PCI Express graphics card, which contains the graphics processor unit (GPU) and provides the computer's display ports. The graphics card is installed in slot1.

You can install additional PCI Express graphics and expansion cards. Before installing a card, check its specifications to make sure it can operate in your Mac Pro.

To adjust the bandwidth of the PCI Express slots in your Mac Pro, use the Expansion Slot Utility, located in the Utilities folder within the Applications folder.

Important: Combined maximum power consumption for all four PCI Express slots must not exceed 300 watts (W).

To install a PCI Express card:

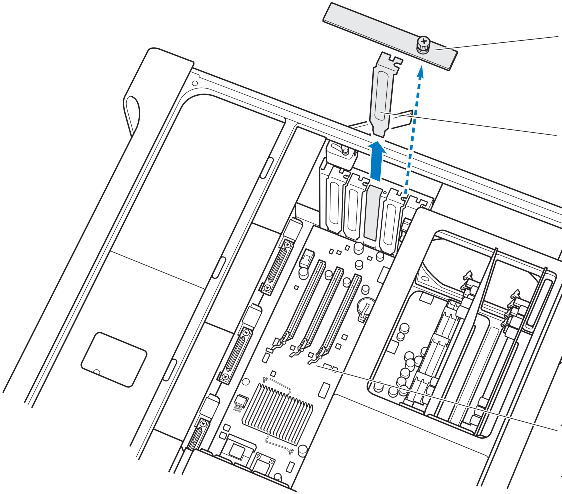
1 Open the computer and remove the side panel (see page 28).

⚠ ***Warning:*** To avoid damaging internal components or the components you want to install, always turn off and then unplug your Mac Pro. Wait 5 to 10 minutes for it to cool down. Do not attempt to install items while it is plugged in.

2 Lay your Mac Pro down on a soft, clean cloth to avoid scratching it or the work surface.

3 Unscrew the captive screw in the PCI bracket and remove the bracket.

4 Remove the port access cover from the slot in which you plan to install the card.

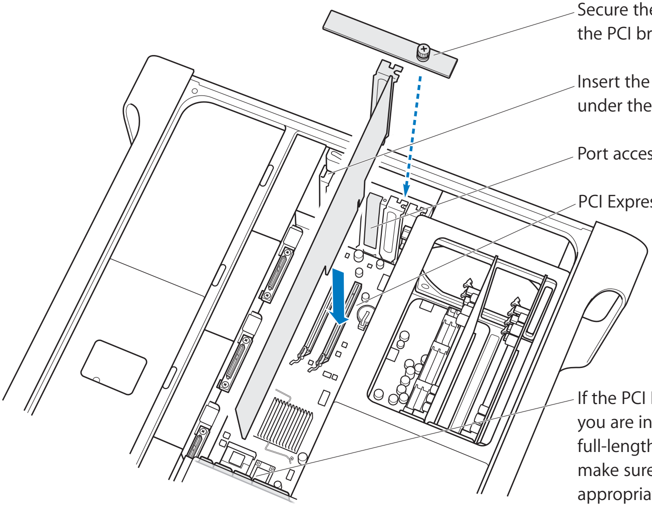


5 Remove your new card from its static-proof bag and hold it by its corners. Don't touch the gold connector or the components on the card.

6 Align the card's connector with the expansion slot and press the card into the slot.

Did You Know?—Installing a Full-Length PCI Card

It may be easier to install a PCI card if you remove the hard disk drives and carriers, and remove adjacent cards. If you have a full-length card, install the end of the card in the card guide first, and then align the card with the PCI slot to finish installing it.



7 Press the card gently but firmly until the connector is fully inserted. Press only on the bare areas of the card to avoid damaging the components.

Note: Don't rock the card from side to side or force it. If you meet resistance, check the connector and slot for damage or obstructions, then try inserting the card again.

8 Pull the card gently to see if it is properly connected. If it stays in place and its gold connectors are barely visible, the card is connected.

9 Replace the PCI bracket and tighten the screw to secure the card.

> ***Warning:*** If you remove a card and don't install a replacement, place a port access cover over the empty slot to keep foreign objects out of the enclosure. An uncovered slot affects the airflow that cools the internal components and may cause damage.

10 Replace the side panel and push the latch down to secure it.

Replacing the Internal Backup Battery

Your Mac Pro uses a CR 2032 Lithium battery that preserves settings, such as the date and time, when your Mac Pro is off. If you notice intermittent problems when your Mac Pro starts up or changes in the date and time settings, you may need to replace the battery.

Important: Dispose of the old battery according to your local environmental laws.

To replace the battery:

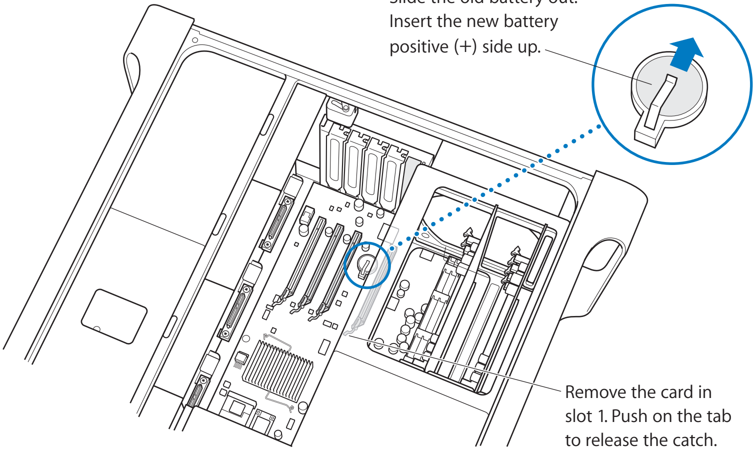
1 Open your Mac Pro and remove the side panel, following the instructions on page 28.

2 Remove any PCI Express cards that block access to the battery. See "Adding PCI Express Cards" on page 47 for instructions.

3 Remove the old battery from the holder.

> ⚠ ***Warning:*** Installing the battery incorrectly may cause an explosion. Use only the same type of battery or an equivalent recommended by the manufacturer of the original.

4 Insert the new battery in the holder with the positive (+) side facing up.



5 Replace the PCI Express cards that you removed. See page 47.

6 Replace the side panel and push the latch down to secure it.

Troubleshooting

4

If you have a problem while working with your Mac Pro, here are some things you can try right away.

Occasionally you may have a problem while working with your Mac Pro. This chapter gives you some solutions to try.

Problems with Your Mac Pro

If your Mac Pro won't respond or turn on, you have trouble ejecting a disk, or the status light is flashing, try the steps in this section.

The computer won't respond or the pointer won't move.

First, make sure the mouse and keyboard are connected by unplugging and then plugging in the connectors, and make sure they are firmly seated.

Then try to cancel what the computer is doing.

- Press the Command (⌘) and Q keys at the same time to try to quit the current application.
- Press the Command (⌘) and period keys at the same time. If a dialog appears, click Cancel.

- Choose Apple () > Force Quit and select the application you want to quit. You can also force quit by pressing the Esc, Option, and Command (⌘) keys at the same time. Restart your Mac Pro by choosing Apple () > Restart to be sure the problem is entirely cleared up. You can also restart by pressing the power (⏻) button for about 5 or 6 seconds until your Mac Pro shuts down. Press the power (⏻) button again to start up your Mac Pro.
- *If the problem occurs only when you use a particular program,* check with the program's manufacturer to see if it is compatible with your computer.
- *If the problem occurs frequently,* choose Help > Mac Help and search for "problems."

The computer won't turn on or start up.

- Make sure the power cord is connected to a working power source. The plug on the power cord must be completely inserted into the computer's power socket and firmly seated.
- If your computer still does not start up, try resetting the parameter random access memory (PRAM). Turn on the computer and immediately hold down the Command (⌘), Option, P, and R keys until you hear the startup sound a second time. Release the keys. Set your hard disk as the computer's startup disk, by doing the following:

1. Choose Apple () > System Preferences.
2. Click Startup Disk.
3. Select your hard disk.

The PRAM is reset to the default values and your clock settings may need to be reset.

- If your computer does not start up after resetting the PRAM, restart your computer while holding down the Option key to select your startup disk.

- If this doesn't work, restart your computer while holding down the Shift key.

You are unable to eject a disc.
A file on the disc may be in use. Quit applications that are open, and then try again.

If that doesn’t work, choose Apple () > Restart and hold down either the mouse button or the Media Eject (⏏) key on your Apple Keyboard.

If that doesn’t work:

1. Shut down the computer.
2. Gently press down the front panel covering the front of the drive tray.
3. Carefully insert the end of a straightened paper clip into the small hole beneath the drive tray.
4. Push firmly until the tray opens.
5. Pull out the tray, remove the disc, and push the tray to close it.

The status light flashes and the computer won’t start up.

- If you recently installed memory, a PCI expansion card, or another internal component, make sure that it is correctly installed and that it is compatible with your computer. See if removing it allows the computer to start up.
- If the status light still flashes, determine the number of flashes to identify the problem:
  - *One short flash followed by a longer off period:* No valid memory.
  - *Three short flashes followed by a longer off period:* Failed memory.

Problems with Software

When an application "freezes" or does not respond, Mac OS X provides a way to quit the application without restarting your computer. Quitting a frozen application may allow you to save your work in other open applications.

To force an application to quit:

1. Press Command (⌘)-Option-Esc or choose Apple () > Force Quit from the menu bar.
2. Select the name of the application you want to quit in the Force Quit Applications dialogue.
3. Click Force Quit.

The application quits, leaving all other applications open.

You have a problem with a software program.

- Use Software Update to ensure that you have the latest drivers, bug fixes, and other updates.
- For problems with software from a manufacturer other than Apple, contact the manufacturer.

You have a problem using your computer or working with Mac OS X.

- Look in Mac Help (in the Help menu) for instructions and troubleshooting information.
- For the latest troubleshooting information and software updates, go to the Apple Support website at www.apple.com/support.

Keeping Your Software Up to Date

You can connect to the Internet and automatically download and install the latest free software versions, drivers, and other enhancements from Apple.

When you are connected to the Internet, Software Update checks Apple's Internet servers to see if any updates are available for your computer. You can set your Mac to check the Apple servers periodically and download and install updated software.

To check for updated software:

1. Open System Preferences.
2. Click the Software Update icon and follow the onscreen instructions.
   - For more information, search for "Software Update" in Mac Help.
   - For the latest information about Mac OS X, go to the Mac OS X website at www.apple.com/macosx.

Problems with AirPort Wireless Communication

If you have trouble using AirPort wireless communication:

- Make sure you have properly configured the software according to the instructions that came with your base station.
- Make sure the computer or network you are trying to connect to is running and has a wireless access point.
- Make sure you are within antenna range of the other computer or the network's access point. Nearby electronic devices or metal structures can interfere with wireless communication and reduce this range. Repositioning or rotating the computer may improve reception.

- Check the AirPort signal level. You may have up to four bars in the AirPort status icon in the menu bar.
- For more information, see the instructions that came with the wireless device or search for "AirPort" in Mac Help.

Problems with Your Display

Warning: If you have a problem with your Apple display and nothing in this manual solves it, contact an Apple Authorized Service Provider or Apple for assistance. If you attempt to repair the display yourself, any damage you may cause to the display will not be covered by the limited warranty on your display. Contact an Apple Authorized Reseller or Apple Authorized Service Provider for additional information about this or any other warranty question.

No image appears on the screen.

- Make sure the display and computer are turned on.
- Make sure the cables are connected properly to your computer and the display.
- If your graphics card has an internal power cable, make sure its connected to the card and the logic board.
- Make sure your computer is not in sleep. Press the power button or any key to see if the computer wakes.
- Make sure the display brightness and contrast are set properly. Some displays have brightness and contrast controls on or under their front edge.

- Reset the PRAM by restarting the computer while holding down the Command (⌘), Option, P, and R keys until you hear the startup sound a second time. Then start up using the software installation disc that came with your computer.

The screen image appears dim or flickers.

- Adjust the display brightness and contrast settings. Some displays have brightness and contrast controls on or under their front edge. Or you may be able to adjust brightness or contrast using the Displays pane of System Preferences.
- Calibrate the display by choosing Apple () > System Preferences. Click Displays, select Color, and click Calibrate. For more information on color and your display, see Mac Help.
- The flickering may be caused by interference from a nearby power line, a fluorescent light, or an electrical device—for example, a radio, a microwave oven, or another computer. Try relocating nearby electrical devices or moving your computer and display.

No colors appear on the screen or the colors don't look right.

- Make sure the display is connected firmly to the computer.
- Calibrate your display, as described above.
- Open the Displays pane of System Preferences and make sure your display is set to display colors. For more information on color and your display, see Mac Help.

After you change the screen resolution, desktop icons move.

Changing the screen resolution affects the display of information on your screen. The operating system may reposition icons when you change the screen resolution.

The screen freezes.

- Force the frozen application to quit. Choose Apple () > Force Quit and select the application.
- If that doesn't work, force the computer to restart by pressing the power button (⏻) for 5 or 6 seconds until your Mac Pro shuts down. Press the power button (⏻) again to start up your Mac Pro.

The light on the front of the display is flashing.

On some Apple flat panel displays, the power light displays a series of short flashes when an error is detected.

- *If you see a repeating sequence of three short flashes,* the display is detecting input in the wrong video format. Make sure your display is compatible with your graphics card and that you've installed the correct display software, if your display came with installation software.
- *If you see a sequence of two short flashes and a long flash,* the display is detecting a problem with a backlighting lamp. Contact an Apple Authorized Reseller or Apple Authorized Service Provider.

Problems with Your Internet Connection

If you have trouble with your Internet connection, you can try the steps in this section starting with Network Diagnostics.

To use Network Diagnostics:

1. Choose Apple () > System Preferences.
2. Click Network and then click "Assist me."

3. Click Diagnostics to open Network Diagnostics.
4. Follow the onscreen instructions.

If Network Diagnostics can't resolve the problem, there may be a problem with the Internet service provider (ISP) you are trying to connect to, with an external device you are using to connect to your ISP, or with the server you are trying to access. You can also try the following steps.

Cable Modem, DSL, and LAN Internet Connections

Make sure all modem cables are fully plugged in, including the modem power cord, the cable from the modem to the computer, and the cable from the modem to the wall jack. Check the cables and power supplies for Ethernet hubs and routers.

Turn the modem on and off to reset the modem hardware.
Turn off your DSL or cable modem for a few minutes, and then turn it back on. Some ISPs recommend that you unplug the modem's power cord. If your modem has a reset button, you can press it either before or after you turn the power off and on.

PPPoE Connections

If you are unable to connect to your Internet service provider using PPPoE, make sure you have entered the correct information in Network preferences.

Check System Preferences settings:

1. Choose Apple () > System Preferences.
2. Click Network.
3. Choose Network Port Configurations from the Show pop-up menu.
4. Drag Built-in Ethernet to the top of the Port Configurations list.
5. Choose Built-in Ethernet from the Show pop-up menu.

6. Click PPPoE.
7. Select "Connect using PPPoE."
8. Check the Account Name field to be sure you have entered the correct information from your ISP.
9. Retype your password if you chose to save your password, making sure it is correct.
10. Click TCP/IP. Make sure you've entered the correct information from your ISP in this pane.
11. Click Apply Now.

Network Connections

Make sure the Ethernet cable is plugged into your computer and into the network. Check the cables and power supplies to your Ethernet hubs and routers.

If you have two or more computers sharing an Internet connection, be sure that your network is set up properly. You need to know if your ISP provides only one IP address or if it provides multiple IP addresses, one for each computer.

If only one IP address is used, then you must have a router capable of sharing the connection, also known as network address translation (NAT) or "IP masquerading." For setup information, check the documentation provided with your router or ask the person who set up your network. You can use an AirPort Base Station to share one IP address among multiple computers. For information about using an AirPort Base Station, check Mac Help or visit the Apple AirPort website at www.apple.com/support/airport.

If you cannot resolve the issue using these steps, contact your ISP or network administrator.

Using Apple Hardware Test

You can use Apple Hardware Test to help determine if there is a problem with your computer's hardware.

To use Apple Hardware Test:

1. Disconnect all external devices from your computer except the keyboard and mouse. If you have an Ethernet cable connected, disconnect it.
2. Insert the Mac OS X Install Disc 1 that came with your computer.
3. Restart your computer and hold down the D key as it starts up.

   A list of available startup volumes appears.
4. Click Apple Hardware Test and click the right arrow.
5. Follow the onscreen instructions when the Apple Hardware Test main screen appears (after about 45 seconds).
6. If Apple Hardware Test detects a problem, it displays an error code. Make a note of the error code before pursuing support options.

If Apple Hardware Test does not detect a hardware failure, the problem may be software-related.

For more information about Apple Hardware Test, see the Apple Hardware Test Read Me file on the Mac OS X Install Disc 1.

Reinstalling the Software that Came with Your Computer

Use the software installation discs that came with your computer to reinstall Mac OS X and the applications that came with your computer.

Important: Apple recommends that you back up the data on your hard disk before restoring software. Apple is not responsible for any lost data.

Installing Mac OS X

To install Mac OS X:

1. Back up your important files, if possible.
2. Insert the Mac OS X Install Disc 1 that came with your computer.
3. Double-click "Install Mac OS X and Bundled Software."
4. Follow the onscreen instructions.
5. Select the destination disk for installation and continue following the onscreen instructions.

   Your computer may restart and ask you to insert the next Mac OS X disc.

Important: Because the "Erase and Install" option erases your destination disk, you should back up your essential files before installing Mac OS X and other applications.

Installing Applications

To install the applications that came with your computer, follow the steps below. Your computer must have Mac OS X already installed.

To install the applications:

1. Back up your important files, if possible.
2. Insert the Mac OS X Install Disc 1 that came with your computer.

3 Double-click "Bundled Software."

4 Follow the onscreen instructions.

5 Select the destination disk for installation and continue following the onscreen instructions.

Note: iCal, iChat, iSync, iTunes, and Safari are part of Mac OS X. To install these applications, follow the "Installing Mac OS X" instructions above.

Maximizing Ethernet Performance

Your computer performs best when the Ethernet port to which it is connected is set to autonegotiate. Ask your network administrator to verify this setting.

Important: If you experience connection problems on your network, make sure your network switch is set to autonegotiate, if possible. If a switch's port is not autonegotiating, your computer detects the appropriate speed but defaults to half-duplex mode. If the switch's port at the other end of the link is configured for full-duplex mode, a large number of late events can occur on the link. If it isn't possible to set the switch to autonegotiate, then set the switch's port to half-duplex. For more information, see the documentation that came with the Ethernet switch.

Note: If you connect your computer directly to a configurable Ethernet switch, have your network administrator disable the spanning tree protocol on that port. Otherwise your computer may duplicate the AppleTalk address of another computer on the same network and both network connections may become unreliable.

Learning More, Service, and Support

If your Mac Pro needs service, take it to an Apple Authorized Service Provider or contact Apple for service. You can find more information about your Mac Pro through online resources, onscreen help, System Profiler, or Apple Hardware Test.

If you didn't order AirPort or Bluetooth wireless technology with your Mac Pro, contact an Apple Authorized Service Provider or an Apple Store.

Online Resources

For online service and support information, go to www.apple.com/support/. Choose your country from the pop-up menu. You can search the AppleCare Knowledge Base, check for software updates, or get help on Apple's discussion boards.

Onscreen Help

You can often find answers to your questions, as well as instructions and troubleshooting information, in Mac Help. Choose Help > Mac Help.

System Profiler

To get information about your computer, use System Profiler. System Profiler shows you which hardware and software is installed, the serial number and operating system version, how much memory is installed, and more. To open System Profiler, choose Apple () > About This Mac from the menu bar and then click More Info.

Apple Hardware Test

You can use Apple Hardware Test to diagnose hardware problems on your Mac Pro. For more information, see "Using Apple Hardware Test" on page 63.

AppleCare Service and Support Information

Your Mac Pro comes with 90 days of telephone support and one year of service coverage at an Apple-authorized repair center. You can extend your coverage by purchasing the AppleCare Protection Plan. For more information, visit the website address for your country listed below.

If you need further assistance, AppleCare telephone support representatives can help you with installing and opening applications, and with basic troubleshooting. Call the support center number nearest you (the first 90 days are complimentary). Have the date of purchase and your Mac Pro serial number ready when you call.

Note: Your 90 days of complimentary telephone support begins on the date of purchase. Telephone fees may apply.

Country	Phone	Website
United States	1-800-275-2273	www.apple.com/support
Australia	(61) 133-622	www.apple.com/au/support
Canada (English) (French)	1-800-263-3394	www.apple.com/ca/support www.apple.com/ca/fr/support
Ireland	(353) 1850 946191	www.apple.com/ie/support
New Zealand	00800-7666-7666	www.apple.com/au/support
United Kingdom	(44) 0870 876 0753	www.apple.com/uk/support

For a complete list, go to www.apple.com/contact/phone_contacts.html. Telephone numbers are subject to change, and local and national telephone rates may apply.

Locating Your Serial Number

System Profiler shows the serial number of your Mac Pro. Open System Profiler, located in the Utilities folder in the Applications folder, and click the System Profile tab.

The serial number is also on the configuration label, which is located on the back of your Mac Pro near the video ports.

Specifications

Processor and Memory Specifications

Processor

- Dual-Core Intel Xeon processor
- 4 megabytes (MB) of on-chip L2 cache per dual-core processor
- 1333 MHz dual independent frontside bus

Random-access memory (RAM)

- Fully buffered Dual Inline Memory Modules (FB-DIMMs)
- PC2-5300, 667 MHz FB-DIMMs
- DIMMs must be installed in pairs of equal size and equal specification (an equal number of devices per DIMM)
- Eight DIMM slots available (four slots per memory card)
- Error-correcting code (ECC)
- 72-bit wide, 240-pin modules
- 36 memory devices maximum per DIMM
- Contain an Apple-approved heat sink (for best acoustic performance)
- Conform to JEDEC specification (see page 32)
- Maximum height of 1.25 inches
- Nonparity

System Profiler, located in the Utilities folder in the Applications folder, provides information about your computer, including the amount of memory.

Graphics Card

PCI Express graphics card with two Digital Visual Interface (DVI) connectors.

Video Display Modes

For technical specifications for your display:

- *Apple displays:* Go to www.apple.com/displays.
- *Non-Apple displays:* Go to www.apple.com/guide.

SuperDrive (DVD+R DL/DVD±RW/CD-RW) Specifications

- *Disc diameters supported:* 12 cm and 8 cm

Data formats

- CD-ROM
- CD-Audio
- CD-R
- CD-RW
- CD-I
- CD-I Bridge
- CD Extended
- CD Mixed Mode
- Photo CD
- Video CD

- Enhanced CD
- DVD-Video
- DVD±R
- DVD±RW
- DVD+R DL

USB Specifications

- Support for Universal Serial Bus (USB) 2.0 and 1.1
- Seven external USB Type A ports
  - Two USB 2.0 ports on the front
  - Three USB 2.0 ports on the back
  - Two USB 1.1 ports on the Apple Keyboard
- Each rear port is on a separate 480 megabit-per-second (Mbps) USB channel
- 500 milliamperes (mA) available for a total of 1.5 A on the rear and 1.0 A on the front

FireWire Specifications

- Support for FireWire 400 and FireWire 800
- Four external FireWire ports: one FireWire 400 port and one FireWire 800 port on both the front and back
- *Data transfer speed:*
  - *FireWire 400:* 100, 200, and 400 Mbps
  - *FireWire 800:* 100, 200, 400, and 800 Mbps

Power

- *Output voltage:* Approximately 12 V
- *Output power:* Up to a maximum of 28 W for all 4 ports or 7 W for any one port

Ethernet Specifications

- IEEE 802.3 compliant
- *Maximum cable length:* 100 meters (m)
- *Protocols:* Open Transport, AppleShare, AppleTalk, NetWare for Macintosh, TCP/IP
- *Connector:* RJ-45 for 10Base-T, 100Base-TX, and 1000Base-T
- *Media, 10Base-T:* Category (CAT) 3 or higher UTP on 2 pairs up to 100 m
- *Media, 100Base-TX:* CAT 5e UTP on 2 pairs up to 100 m
- *Media, 1000Base-T:* CAT 5e UTP on 4 pairs up to 100 m
- *Channel speeds:* IEEE Autonegotiation of 10Base-T, 100Base-TX, and 1000Base-T

Bluetooth 2.0+EDR Specifications (Optional)

- *Wireless data rate:* Up to 3 Mbps
- *Range:* Up to 10 meters or 33 feet (data rates may vary depending on environmental conditions)
- *Frequency band:* 2.4 gigahertz (GHz)

AirPort Extreme Specifications (Optional)

- *Wireless data rate:* Up to 54 Mbps
- *Range:* Up to 150 feet (data rates may vary depending on environmental conditions)
- *Frequency band:* 2.4 gigahertz (GHz)
- *Radio output power:* 15 dBm (nominal)

Compatibility

- 802.11 b and g

Optical Digital Audio Specifications

- *Data format:* Sony/Phillips Digital Interface (S/PDIF) protocol (IEC60958-3)
- *Connector type:* Toslink optical (IEC60874-17)
- *Bits per sample:* 16-bit or 24-bit

Optical digital audio out

Based on a typical situation with playback of 1 kHz, 0dBFS 24-bit sine wave, 44.1 kHz output sample rate, unless otherwise specified below.

- *Output sample rate:* 44.1 kHz, 48 kHz, or 96 kHz
- *Signal-to-noise ratio:* Greater than130 dB
- *Total harmonic distortion + noise:* Less than -130 dB (0.00001 percent)

Optical digital audio in

Based on a typical situation with playback of 1 kHz, 0dBFS 24-bit sine wave, unless otherwise specified below.

- *Input sample rate:* 44.1 kHz, 48 kHz, or 96 kHz
- *Signal-to-noise ratio:* Greater than130 dB
- *Total harmonic distortion + noise:* Less than -130 dB (0.000001 percent)

Analog Audio Specifications

- *Sample rate:* 44.1 kHz, 48kHz, or 96 kHz
- *Jack type:* 1/8" mini
- *Bits per sample:* 16-bit or 24-bit
- *Frequency response:* 20 Hz to 20 kHz, +0.5 dB/-3 dB

Analog audio out using the headphone jack (typical values)

Based on a typical situation with playback of 1 kHz, -3dBFS 24-bit sine wave, 44.1 kHz output sample rate into 150 ohms unless otherwise specified below.

- *Output voltage:* 1.4 volts (root mean square) (V_{rms}) (+5.1 dBµ)
- *Output impedance:* 24 ohms
- *Output power:* 90 milliwatts (mW)
- *Signal-to-noise ratio:* Greater than 90 dB
- *Total harmonic distortion + noise:* Less than -75 dB (.01 percent)
- *Channel separation:* Greater than 55 dB

Analog audio line in (typical values)

Based on a typical situation with playback of 1 kHz, -3dBFS 24-bit sine wave, 44.1 kHz output sample rate unless otherwise specified below.

- *Maximum input voltage:* 2 V_{rms} (+8.2 dBµ)
- *Input impedance:* Greater than 20 kilohms
- *Signal-to-noise ratio:* Greater than 90 dB
- *Total harmonic distortion + noise:* Less than -85 dB (.006 percent)
- *Channel separation:* Greater than 75 dB

Analog audio line out (typical values)

Based on a typical situation with playback of 1 kHz, -3dBFS 24-bit sine wave, 44.1 kHz output sample rate into 100 kilo-ohms unless otherwise specified below.

- *Output voltage:* 1.6 V_{rms} (+6.3 dBµ)
- *Output impedance:* 24 ohms
- *Signal-to-noise ratio:* Greater than 90 dB
- *Total harmonic distortion + noise:* Less than -85 dB (.01 percent)
- *Channel separation:* Greater than 65 dB

Power Supply

AC line input

- *Voltage ranges:* 100–120 V alternating current (AC) and 200–240 VAC
- *Current:* Maximum of 12 A (low voltage range) or 6 A (high voltage range)
- *Frequency:* 50–60 Hz

Power Requirements for Expansion Cards and Peripherals

Expansion cards

Combined maximum power consumption for all four PCI Express slots should not exceed 300 watts (W).

USB devices

Each of the computer's built-in USB ports is allotted 500 mA.

FireWire devices

The computer can provide up to 28 W total to the FireWire ports.

System Clock and Battery

Your computer has CMOS custom circuitry with a long-life battery.

Battery

Use a 3 V, CR 2032 Lithium coin cell replacement battery (see "Replacing the Internal Backup Battery" on page 50).

Dimensions and Operating Environment

Dimensions

- *Weight:* 19.2 kg (42.4 lbs.)

  Weight depends on configuration. The weight above is for a basic configuration and may be greater if optional devices are installed.
- *Height:* 511 mm (20.12 in.)
- *Width:* 206 mm (8.11 in.)
- *Depth:* 475 mm (18.70 in.)

Operating environment

- *Operating temperature:* 10° to 35° C (50° to 95° F)
- *Storage temperature:* –40° to 47° C (–40° to 116° F)
- *Relative humidity:* 5% to 95% (noncondensing)
- *Altitude:* 0 to 3048 meters (0 to 10,000 feet)

Safety, Maintenance, and Ergonomics

B

Appendix

This appendix provides important information about safety procedures, routine maintenance, and ergonomic considerations for using your computer and display.

Important Safety Information

The only way to disconnect power completely from your computer is to unplug the power cord from the main power supply. To disconnect your display completely, you must also unplug its power cable from the computer or power outlet. Make sure that at least one end of the device's power cord is within easy reach so that you can unplug the computer or display when necessary.

For your own safety and that of your equipment, always take the following precautions.

Disconnect the power plug (by pulling the plug, not the cord), from your computer or display and disconnect the phone cord if any of the following conditions exists:

- The power cord or plug becomes frayed or otherwise damaged
- You spill something into the case
- Your computer or display is exposed to rain or any other excess moisture

- Your computer or display has been dropped or the case has been otherwise damaged
- You suspect that your computer or display needs service or repair
- You want to clean the computer or the case or screen of the display
- If you plan to store your computer for an extended period of time, remove the battery.

For service or questions about your warranty, contact an Apple Authorized Service Provider or Apple. Service and support information is included with your computer's documentation.

Apple and the Environment

At Apple, we recognize our responsibility to minimize the environmental impacts of our operations and products.

For information, go to www.apple.com/environment.

General Maintenance

If you need to clean the computer or display by doing more than wiping it down with a clean cloth, follow these instructions:

1. Turn off your computer and display.
2. Disconnect the computer power cable from the electrical outlet or power strip. If your display is connected to an outlet, disconnect it as well.
3. Disconnect the display's cables from the computer.

4 Clean the display screen with soft, lint-free paper or cloth dampened with mild soap and water.

⚠ *Warning:* Do not spray liquid directly onto the display screen. Liquid could drip inside the display and cause electrical shock.

5 Wipe the computer or display case surfaces lightly with a clean, soft cloth dampened with water.

Important: Don't use alcohol, aerosol sprays, solvents, or abrasives that might damage the finish on the case.

Protecting Your Optical Drive

To keep your optical drive working properly:

- Position your computer so that the drive tray doesn't bump into anything when it opens.
- Close the drive when you're not using it.
- Do not put anything on the drive tray when it is open.
- Do not touch the optical drive lens with your fingers. Do not wipe the lens with a paper towel or other abrasive surface. If you need to clean the lens, see an Apple Authorized Service Provider for a lens cleaner.
- Keep your computer away from any source of moisture.

Maintaining Your Display

To maintain your display and ensure its long life:

- Do not press on the surface of the display screen.

- Do not write on the screen or touch the screen with a sharp object.
- If you will not be using your display and computer for a day or more, turn off the computer and display or use Energy Saver.
- Turn off your display, turn down the brightness, or use a screen saver program that dims or varies the image on the screen when the computer is idle for a prolonged time.

Important Ergonomic and Health-Related Information

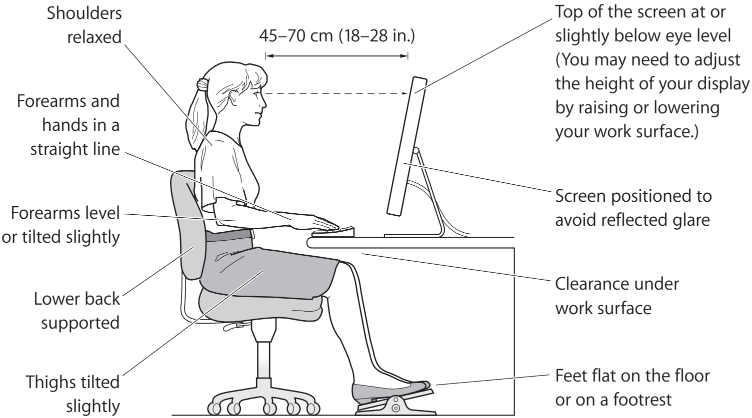
Here are some guidelines for adjusting the furniture in your office to reduce glare and to accommodate your physical size and shape.

- Use an adjustable chair that provides firm, comfortable support. Adjust the height of the chair so your thighs are tilted slightly and your feet are flat on the floor.

  The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.
- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.

  You may have to raise the chair so that your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you can lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

- Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.
- Arrange the display so that the top of the screen is slightly below eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).
- Position the display to minimize glare and reflections on the screen from overhead lights and nearby windows. If possible, use a tiltable display stand. The stand lets you set the display at the best angle for viewing, helping to reduce or eliminate glare from lighting sources you can't move.



For more information about health, safety, and maintenance, go to the Apple ergonomic website at www.apple.com/about/ergonomics.

Avoid Hearing Damage

Warning: Permanent hearing loss may occur if earbuds or headphones are used at high volume. You can adapt over time to a higher volume of sound that may sound normal but can be damaging to your hearing. If you experience ringing in your ears or muffled speech, then stop listening and have your hearing checked. The louder the volume, the less time required before your hearing can be affected. Hearing experts suggest that to protect your hearing:

- Limit the amount of time you use earbuds or headphones at high volume
- Avoid turning up the volume to block out noisy surroundings
- Turn the volume down if you can't hear people speaking to you

Communications Regulation Information

Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. See instructions if interference to radio or television reception is suspected.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes : (1) il ne doit pas produire de brouillage et (2) l'utilisateur du dispositif doit étre prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

Radio and Television Interference

This computer equipment generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple Authorized Service Provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

Important: Changes or modifications to this product not authorized by Apple Computer, Inc., could void the EMC compliance and negate your authority to operate the product.

This product has demonstrated EMC compliance under conditions that included the use of compliant peripheral devices and shielded cables between system components. It is important that you use compliant peripheral devices and shielded cables (including Ethernet network cables) between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices.

Responsible party (contact for FCC matters only):
Apple Computer, Inc.

Product Compliance
1 Infinite Loop M/S 26-A
Cupertino, CA 95014-2084

Wireless Radio Use

This device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range to reduce the potential for harmful interference to co-channel Mobile Satellite systems.

Cet appareil doit etre utilise a l'interieur.

Exposure to Radio Frequency Energy

The radiated output power of the AirPort Card in this device is below the FCC radio frequency exposure limits for uncontrolled equipment. This device should be operated with a minimum distance of at least 20 cm between the AirPort Card antennas and a person's body and must not be co-located or operated with any other antenna or transmitter.

FCC Bluetooth Wireless Compliance

The antenna used with this transmitter must not be colocated or operated in conjunction with any other antenna or transmitter subject to the conditions of the FCC Grant.

Bluetooth Industry Canada Statement

This Class B device meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Industry Canada Statement

Complies with the Canadian ICES-003 Class B specifications. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada. This device complies with RSS 210 of Industry Canada.

Bluetooth Europe–EU Declaration of Conformity

This wireless device complies with the specifications EN 300 328, EN 301-489, and EN 60950 following the provisions of the R&TTE Directive.

Europe–EU Declaration of Conformity

The equipment complies with the RF Exposure Requirement 1999/519/EC, Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). This equipment meets the following conformance standards: EN300 328, EN301 893, EN301 489-17, EN60950.

Hereby, Apple Computer, Inc., declares that this 802.11 Mini-PCIe card is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Complies with European Directives 72/23/EEC, 89/336/EEC, and 99/5/EC.
See www.apple.com/euro/compliance.

Korea Mouse Statement

명 칭(모 델 명) : Mighty Mouse (A1152)
인 증 번 호 : E-C011-05-3838(B)
인 증 자 상 호 : 애플컴퓨터코리아(주)
제 조 년 월 일 : 별도표기
제조자/제조국 : Apple Computer Inc. / 말레이지아

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제 조 년 월 일 : 별도표기
제조자/제조국 : Apple Computer Inc. / 중국

Korea Keyboard Statement

명 칭/모 델 명 : Keyboard
인 증 번 호 : E-C012-03-1188 (B)
인 증 자 상 호 : 애플컴퓨터코리아(주)
제 조 년 월 : 별 도 표 기
제조자/제조국 : Apple Computer, Inc. / 중국 , 말레이시아

Korea Statements

"당해 무선설비는 운용 중 전파혼신 가능성이 있음"

B급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서
주거지역에서는 물론 모든지역에서 사용할 수 있습니다.

Singapore Wireless Certification

Complies with
IDA Standards
DB00063

Taiwan Wireless Statements

於 2.4GHz 區域內操作之
無線設備的警告聲明

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

於 5.25GHz 至 5.35GHz 區域內操作之
無線設備的警告聲明

工作頻率 5.250 ～ 5.350GHz 該頻段限於室內使用。

Taiwan Statement

產品名稱：滑鼠

型號：A 1 1 5 2

進口商：美商蘋果電腦股份有限公司台灣分公司

Taiwan Class B Statement

Class B **設備的警告聲明**
NIL

VCCI Class B Statement

情報処理装置等電波障害自主規制について

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は家庭環境で使用されることを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取扱をしてください。

Mouse Class 1 LED Information

The Apple Mighty Mouse is a Class 1 LED product in accordance with IEC 60825-1 A1 A2.

It also complies with the Canadian ICES-003 Class B Specification.

Using an External USB Modem

If you connect your Mac Pro to a phone line using an external USB Modem, please refer to the telecommunications agency information in the guide that came with your modem.

ENERGY STAR® Compliance

As an ENERGY STAR® partner, Apple has determined that standard configurations of this product meet the ENERGY STAR guidelines for energy efficiency. The ENERGY STAR program is a partnership with office product equipment manufacturers to promote energy-efficiency. Reducing energy consumption of office products saves money and reduces pollution by eliminating wasted energy.

Disposal and Recycling Information

When this product has reached the end of its useful life, please dispose of it according to your local environmental laws and guidelines.

For information about Apple's recycling program, go to www.apple.com/environment.

European Union



The symbol above means that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

Battery Disposal

Your Mac Pro has an internal backup battery that preserves settings, such as the date and time, when the computer is off. When replacing the internal backup battery, dispose of the spent battery according to your local environmental laws and guidelines.

Nederlands: Gebruikte batterijen kunnen worden ingeleverd bij de chemokar of in een speciale batterijcontainer voor klein chemisch afval (kca) worden gedeponeerd.



Deutschland: Das Gerät enthält Batterien. Diese gehören nicht in den Hausmüll. Sie können verbrauchte Batterien beim Handel oder bei den Kommunen unentgeltlich abgeben.Um Kurzschlüsse zu vermeiden, kleben Sie die Pole der Batterien vorsorglich mit einem Klebestreifen ab.

Taiwan:



廢電池請回收

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